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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,319	12/14/2000	Satoru Toguchi	1558-14	9502

7590 12/03/2002

LAFF, WHITESEL & SARET  
401 North Michigan Avenue  
Chicago, IL 60611

EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 12/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No. 09/737,319		Applicant(s) TOGUCHI ET AL.	
Examiner Marie R. Yamnitzky		Art Unit 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 September 2002.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 and 7-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

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1. This Office action is in response to applicants' amendment received 09/18/02 (Paper No. 3) which amends the specification and claims 1, 2, 7 and 9, and cancels claims 6 and 13.

Claims 1-5 and 7-12 are pending.

2. Certified copies of applicants' foreign priority documents were also received 09/18/02.

3. Any objection or rejection that is set forth in Paper No. 2 and is not restated in this Office action has been overcome by applicants' amendment received 09/18/02 with the exception of the following two issues:

With respect to the previously questioned limitations regarding the group with steric hindrance "for suppressing aggregation of molecules", applicants have not explicitly clarified how much aggregation must be suppressed in order to meet the limitations of the claims. However, since applicants have amended the independent claims to set forth the groups that may be the group with steric hindrance, the examiner will interpret the requirement "for suppressing aggregation of molecules" as inherently being met by any group set forth in the last four lines of independent claims 1 and 7 with no specific limit on the amount of aggregation that must be suppressed.

With respect to the rejection under 35 U.S.C. 102(e) or, in the alternative, under 35 U.S.C. 103(a) based on US 6,329,084 B1 to Tamano et al., the 103(a) portion of the rejection is dropped. Since applicants have amended claim 1 to allow each of Ar<sup>1</sup> and Ar<sup>2</sup> to represent a substituted or non-substituted aromatic hydrocarbon group (emphasis added), the Tamano patent

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is now clearly an anticipatory reference. Prior art compounds of formulae (3) and (67) as shown in Table 1 of the patent were outside the scope of a perylene compound as required by original claim 1, but are within the scope of a perylene compound as required by amended claim 1.

4. Claim 2 stands rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2: Antecedent basis is lacking for "A<sup>1</sup>". "A<sup>1</sup>" should apparently read --Ar<sup>1</sup>--.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1 and 3-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Tamano et al. (US 6,329,084 B1).

Tamano et al. disclose perylene compounds meeting the limitations of the perylene compound of general formula [1] as defined in present claim 1. For example, see formula (3) spanning columns 7 and 8, and formula (67) spanning columns 53 and 54. The prior art perylene

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compounds are disclosed for use in the light-emitting layer of an organic EL device and are used in combination with other compounds.

With respect to claims 4 and 5, the examiner notes that these claims do not explicitly require the hole transporting layer (in the case of claim 4) or the electron transporting layer (in the case of claim 5) to be separate from the light-emitting layer. In a device having only a single organic layer between the anode and cathode, the organic layer will provide all the functions of light-emission, hole-transportation and electron-transportation.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-5 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-185961.

The prior art generically discloses benzoperylene compounds encompassing compounds within the scope of the perylene compound of general formula [1] as defined in claim 1 and the benzoperylene compound of general formula [2] as defined in claim 7. For example, see the English language abstract and formula (1) as shown on the first page of the Japanese language document. These prior art compounds are taught for use in at least one organic thin film layer of an organic EL device, and may be used alone or in a mixture.

As shown in the English language abstract, the prior art teaches that the prior art compound of formula (1) may be substituted with a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aromatic heterocyclic group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aryloxy group. Any of these groups meets the requirement for a group with steric hindrance as required by the present claims.

Although the prior art does not show a specific example of a compound containing one of the groups that meets the present claim requirement for a group with steric hindrance, it is the examiner's position that it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make compounds within the scope of prior art formula (1) other than those specifically disclosed, and to make compounds that are similar in structure to the species disclosed by the prior art, for use in organic EL devices. One of ordinary skill in the art would have been motivated to make other compounds similar in structure to those disclosed by the prior art with the expectation that compounds similar in structure and within the scope of the prior art generic formula would have similar properties and could be used for the same purpose as the prior art compounds.

One of ordinary skill in the art would have reasonably expected that prior art compounds of formulae (2)-(6) as shown on pages 9-10 of the Japanese language document, further substituted with one or more of a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aromatic heterocyclic group, a substituted or unsubstituted aralkyl group, or a

substituted or unsubstituted aryloxy group, would have properties similar to those of compounds of formulae (2)-(6) and could be used for the same purpose as the compounds of formulae (2)-(6). One of ordinary skill in the art would have reasonably expected this to be the case since the prior art teaches that the compound of formula (1), of which compounds of formula (2)-(6) are specific examples, may be substituted with any of the aforementioned groups. Prior art compounds of formulae (1)-(6), substituted by any of the aforementioned groups, meet the limitations of the compound of general formula [2] as defined in present claim 7. Prior art compounds of formulae (3)-(6), substituted by any of the aforementioned groups, meet the limitations of the compound of general formula [1] as defined in present claim 1 and the limitations of the compound of general formula [2] as further defined in present claim 8. Prior art compounds of formulae (5) or (6), substituted by any of the aforementioned groups, meet the limitations of the compound of general formula [1] as further defined in present claim 2 and the limitations of the compound of general formula [2] as further defined in present claim 9.

9. Claims 1-3 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-88120.

(Page numbers refer to pages in the machine-assisted translation previously provided for this reference.)

The prior art discloses compounds for the light-emitting layer of a multilayered organic EL device. The compounds contain a condensed aryl group having 30 or less carbon atoms



substituted with two disubstituted amino groups. The substituents of the disubstituted amino groups are substituted or non-substituted aryl groups or heterocyclic groups. For example, see claim 1 (bridging pages 4 and 5) and pp. 16-17. Disubstituted amino groups containing styryl groups are clearly considered to be within the scope of the prior art (e.g. see A-8 on p. 21). Perylene is specifically disclosed as an exemplary condensed aryl group (see p. 14). The condensed aryl group may have substituents in addition to the disubstituted amino groups, such as alkyl groups, alkoxy groups, aryloxy groups and aromatic heterocyclic groups (see pp. 14-15), which meet the requirements for a group with steric hindrance as required by the present claims.

The prior art does not disclose any specific examples of compounds within the scope of present general formula [1] or [2], but such compounds are clearly within the scope of the prior art. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make compounds within the scope of the prior art other than those specifically disclosed, and to make compounds that are similar in structure to the species disclosed by the prior art, for use in organic EL devices. One of ordinary skill in the art would have been motivated to make compounds within the scope of the prior art generic formula other than those specifically disclosed in order to provide compounds suitable for use in the light-emitting layer of an organic EL device. One of ordinary skill in the art would have reasonably expected compounds within the scope of the prior art generic formula other than those specifically disclosed to have light-emitting properties and to be useful in organic EL devices.

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10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1-5 and 7-12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,329,083 B1.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the patent claims fully encompass the subject matter of the present claims. Although the patent claims do not explicitly require at least one group with steric hindrance as defined in present independent claims 1 and 7, the independent patent claim recites each of the possibilities for the group with steric hindrance as set forth in the last four lines of present claims 1 and 7. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make EL devices comprising various species of compounds within the scope of formula C3 of the patent claims with the expectation that species within the scope of formula C3 would be suitable for an EL device.

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12. Applicants' arguments filed 09/18/02 have been fully considered but they are not persuasive with respect to the preceding rejections.

Regarding the rejections under 35 U.S.C. 103(a), the applied prior art references generically disclose the perylene and/or benzoperylene compounds of the rejected claims. The examiner has considered the data set forth in the specification and does not consider the data to demonstrate that perylene and benzoperylene compounds containing a group with steric hindrance that is one of the groups set forth in the last four lines of present claims 1 and 7 necessarily provides superior/unexpected results compared to similar compounds disclosed by the applied prior art references.

The examples demonstrate that compounds within the scope of the present claims provide devices having a considerable range of light emission values. The examples and comparative examples demonstrate that compounds outside the scope of the present claims (and similar to, or the same as, compounds disclosed in the prior art) provide devices having light emission values that are similar to (and in some cases better than) devices made with compounds within the scope of the present claims.

For example, each of the devices of Examples 11-19, 54-64 and Comparative Examples 1-4 has the same device structure, differing only in the compound used in the light emitting layer. Each of the devices of Examples 11-19 utilizes a perylene compound as required by present claim 1. Each of the devices of Examples 54-64 utilizes a benzoperylene compound as required by present claim 7. (The benzoperylene compounds utilized in Examples 55-57, 59-61, 63 and 64 further meet the limitations of the benzoperylene compound as required by present

claim 8.) The light emission provided by the devices of Examples 11-19 ranges from 2300 to 4330  $\text{cd/m}^2$ . The light emission provided by the devices of Examples 54-64 ranges from 670 to 3700  $\text{cd/m}^2$ . (The light emission provided by the devices of Examples 55-57, 59-61, 63 and 64 ranges from 1830 to 3700  $\text{cd/m}^2$ .) In contrast, the devices of Comparative Examples 1 and 2, which utilize a perylene compound that does not meet the limitations of present claim 1, have light emission values of 1600 and 2000  $\text{cd/m}^2$ , respectively, and the devices of Comparative Examples 3 and 4, which utilize a benzoperylene compound that does not meet the limitations of present claim 7 (or 8), have light emission values of 1800 and 2000  $\text{cd/m}^2$ , respectively.

In addition, the data set forth in the specification are not considered to be sufficient to demonstrate superior/unexpected results for the presently claimed invention because the data set forth in the specification are not commensurate in scope with the claims. The claims allow the group with steric hindrance to be one of a variety of groups. Specific perylenes within the scope of general formula [1] utilize only four specific groups for the group with steric hindrance (adamantyloxy, adamantyl, t-butyl and t-butoxy) and, in each case, contain two substituents meeting the limitation of the group with steric hindrance whereas claim 1 and dependents require only one substituent meeting the limitation of the group with steric hindrance. Specific benzoperylenes within the scope of general formula [2] utilize only five specific groups for the group with steric hindrance (t-butyl, adamantyl, phenyloxy, t-butoxy, adamantyloxy).

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13. Miscellaneous:

In line 4 of claim 7, bracketed text that was intended to be deleted by amendment (“[,either singly or as a mixture,]”) needs to be removed from the clean copy of the claim.

A spelling error has been introduced into the third line after formula [2] in claim 7 in that “aklyl” should read --alkyl--.

In claim 8, the phrase “and the group with steric hindrance is other than the diarylamino group” is superfluous, or potentially confusing, since claim 7 has been amended to limit the group with steric hindrance to the groups set forth in the last four lines of claim 7, none of which are diarylamino groups.

14. Applicants’ amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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15. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax numbers for Art Unit 1774 are (703) 872-9311 for official after final faxes and (703) 872-9310 or (703) 305-5408 for all other official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041.)

MRY  
11/29/02



**MARIE YAMNITZKY  
PRIMARY EXAMINER**

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